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MALNUTRITION, A SCHOOL PROBLEM

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Malnutrition among children has increasingly attracted the attention of physicians and teachers alert to the responsibility of promoting the health of pupils. It is self-evident that bodily vigor is essential to school progress and efficiency. The large proportion of physically deficient children even from the best homes is seriously disturbing to those who have investigated the question.

Open-air classes have been organized in many cities for the purpose of remedying this situation, but they reach so few children that the results are comparatively negligible. If any general improvement is to be secured, a plan must be adopted which will build up the physique of all malnourished children in the regular classes. More important still, the active co-operation of the home must be secured. If parents are not actively interested, experience shows that children who are helped by superficial remedial measures, such as open-air classes and school lunches, soon relapse into their former condition.

For some years Montclair had maintained an open-air class and various experiments had been made with open-window classrooms. Some groups had been provided with a light mid-forenoon lunch. The pupils involved had shown improvement so long as such treatment was continued. The intervention of the summer vacation with a consequent interruption of the regular régime of the school resulted in the loss of much of this apparent gain. It became evident that more thoroughgoing measures were necessary.

The work of Dr. W. R. P. Emerson, of Boston, in the establishment of nutrition classes indicated a solution of the problem. The height and weight charts published by the United States Bureau of Education suggested an effective method of procedure. At a conference of the health staff it was decided to make a thorough

health survey of the 5,000 children in the public schools. The height and weight charts of the United States Bureau of Education were taken as the standard.

Accumulated statistics are valueless unless they function at once in the school procedure. Accordingly, the figures were analyzed with great care to determine the most feasible point of attack. Children found to be 7 per cent or more underweight were considered malnourished. The survey revealed the usual disquieting state of affairs. The school percentages of malnourished children ranged from 21 per cent to 33 per cent. The total for the city was 28 per cent. To the surprise of many, the so-called poorest section of the city made the best record. This was probably due to the amount of intensive social work that has been carried on in that district for several years.

The survey revealed one surprising fact which is so opposed to the commonly accepted opinion as to be worth noting. It is usually assumed that a tall child is more likely to be underweight than a short one. Parents and even physicians are satisfied with this explanation for the underweight of the tall child. The facts as they appeared in this study do not substantiate any such assumption. Of a group of four hundred and fifty malnourished children, forty-five were located in the tall group, one hundred and forty-four in the short group, and two hundred and sixty-one in the medium group. Reduced to a percentage basis, 10 per cent of the malnourished group are tall, 32 per cent are short, and 58 per cent are of medium height.

A graph was prepared showing the relative proportion of malnutrition among the Americans, Italians, and negroes. Boys and girls were studied separately and also by grades. One interesting fact disclosed was that the percentage of malnutrition was higher when the children began school (7 per cent) than in the second year (5 per cent). Plainly, the regular routine of school resulted in a physical gain to the child.

With the approach of the age of puberty malnourishment steadily increased, reaching a maximum for the city of 36 per cent in the ninth grade. This was followed by a sharp decrease to 24 per cent in the tenth grade. The reasons for this marked

improvement in the physical condition of high-school students are not clear, but it may be due to the elimination of the physically unfit because of inability to measure up to the scholarship standards of the school. It is equally possible that the high percentage of malnourishment in the ninth grade is caused by the physical disturbance of the adolescent period and, when this is once passed, a marked gain in the weight at once follows. Here is a most interesting field for investigation.

With the facts of the survey available the attention of the health department was directed to the problem of remedial measures. Open-air classes and food at public expense did not seem to offer a permanent solution. Accordingly, a more thoroughgoing program was formulated, intended to reach every malnourished child in the schools. This program involved the following principles:

1. A campaign of education among children.
2. A similar campaign to arouse parents to the importance of this question.
3. A glass of milk served in the mid-forenoon in all schools where the need was apparent. The cost of this milk was to be paid by the home unless conditions made it impossible to meet the expense.
4. Nutrition classes established in schools where conditions were the worst. In these groups food was to be served to children selected on the basis of their need for such treatment, and an opportunity for an hour's nap was provided in a well-ventilated school room. It was relatively a simple matter to secure the interest of the children. One of the government health charts was posted in every classroom. This gave the child's name, age, height, and weight. The proper weight for the indicated height was also shown. A gold star was placed opposite the name of every child for which the proper relation between the two factors appeared. Blue stars showed 7 per cent or less under average weight, and red stars represented those pupils who were more than 7 per cent underweight. The slogan "A gold star for every child in Montclair" was adopted.

Physiology at once became a practical subject. Underweight children were eager to bring up the class record and became

interested in the question of a proper diet and reasonable hours of sleep. Some particularly interesting charts were prepared by the children, illustrating by pictures such ideas as "Healthful Play," "Good and Bad Sleeping Conditions," "The Bath," "Good Posture," "Healthful Foods," "Harmful Foods," and many others of a similar character. As the monthly weight records were posted the children eagerly scanned the list to detect signs of improvement as a result of a self-imposed régime.

The hearty co-operation of parents was recognized as essential to the success of this campaign. Since the first step in securing this co-operation is exact and definite information of the facts, cards were prepared and used for monthly reports to the parents. On one side of the card were spaces for each school month and for entries under each of the following items: height, weight, average weight, below, above, loss, gain, star. The following note is printed at the bottom of the card: "Red star indicates more than 7 per cent under the average weight. Blue star indicates 7 per cent or less under average weight. Gold star indicates average weight or better (not to exceed 25 per cent)."

On the reverse side of the card are spaces for the parent's signature once a month and the following items of information:

The relation of weight to age and height is an indication of a child's physical condition and progress.

A child has a right to be as healthy as the combined knowledge of the home, the school, and the physician can make him. Team work will win.

Coincident with this effort in the classroom, meetings were held in each school, usually under the auspices of the Parents' and Teachers' Associations where the facts of the health survey and the plans for improving the situation were presented by members of the staff. Parents are always interested in whatever is being done to benefit their children, and there was no lack of interest in these meetings. In some instances parents asked for a copy of the health chart in order that they might supplement in the home the efforts made in the school. Unfavorable criticism was rarely heard, as the facts presented were too conclusive to question.

The next step was to find some practicable method of correcting the existing condition. A study of the available reports suggested the wisdom of furnishing a glass of milk with crackers or bread in the middle of the forenoon to those children who were evidently in need of additional nourishment. In three buildings this task was assumed by the school. In another school a group of public-spirited mothers agreed to accept the responsibility. In general, the cost of the milk was paid by the home, but if the financial burden was too great and the child was plainly in need of the food, the cost was met from department funds. Here again an appeal was made to the home, using the following notice:

FACTS REGARDING MONTCLAIR CHILDREN

Over sixty per cent of our children are under average weight. Nearly thirty per cent are more than seven per cent under average weight, which is called by Dr. W. R. P. Emerson of Boston the malnourished group.

Children who are excessively underweight, while they may not be actually sick, are not what they should be or can be. Most of our sturdy children are of average weight or better.

All the information we have shows that excessive underweight does not tend to correct itself and that this condition should be combated by the vigorous efforts of the home and the school.

One of the best foods for building up children is milk. Experience has demonstrated that most children do not get enough milk. More milk frequently is a deciding factor. The school will try to give every underweight child a glass of milk and a cracker or a piece of bread at 10 o'clock in the morning. The cost of this service will not exceed 5 cents per day.

If you approve of this plan, please sign and return the enclosed slip.

PARENTS' PERMISSION AND APPROVAL

If possible, I desire my child to be served with a glass of milk and a cracker or a piece of bread at 10 o'clock.

Signed _____

Address _____

Date _____

A most gratifying response was made to this appeal. About four hundred children were fed one hundred quarts of milk daily. Milk was also sold from the school centers to parents. This totaled about six hundred quarts daily.

In carrying out the third phase of the program, nutrition classes, a school was selected where conditions were favorable. The principal was keenly interested and the social conditions in the homes were such as to enable the parents to meet the expense of the extra food. Twenty-seven children were selected whose physical condition was such as to justify the assumption that they would benefit from treatment of this kind. A competent woman was employed by the school department to cook and serve the food. A sunny, well-ventilated room was equipped with cots and blankets where pupils took a forty-minute nap at noon. Food consisted of a milk-and-bread-and-butter breakfast, a substantial dinner, and a milk lunch with bread and butter in the afternoon before the children leave for home. This is substantially the same régime as is followed in the typical open-air class with two important modifications. Children are not kept in a room maintained at a low temperature, and the department is saved the heavy expense of a special teacher. The home is asked to meet the expense of the raw food, while the school bears the expense of the matron's salary, equipment, and general overhead. Parent co-operation is readily secured in providing a home breakfast and supper in conformity with the wishes of the school physician.

The daily cost per child is approximately 30 cents to the home for the food and 15 cents overhead to the school. All the children in this school are weighed at regular intervals, furnishing data for a comparison of the relative advantage of the three methods of treatment, viz., (a) nutrition class with food, (b) milk in the forenoon, and (c) home care only.

The returns are unmistakable, even though the scheme has been in operation only seven weeks. The twenty-seven pupils in the nutrition class have made an average gain of $3\frac{7}{10}$ pounds. The group of one hundred and seventeen children taking milk have made an average gain of $2\frac{4}{10}$ pounds, while one hundred and thirty-four pupils receiving home care have gained only an average of $2\frac{2}{10}$ pounds during the period. Undoubtedly, the homes of the latter group have been greatly influenced by the active campaign of home education, making this gain larger than

is to be expected under usual conditions. That the education campaign is productive of results is evidenced by the reduction of the percentage of the malnourished group from 39 per cent on September 20 to 26 per cent on November 12. It is not to be expected, however, that this rate of improvement will continue, since the 13 per cent reduction in the malnourished group has occurred among those most amenable to treatment.

Evidence is not lacking that this problem of malnourishment is more common than is generally supposed. The Children's Aid Society of New York City reports "undernourished children are to be found in appalling numbers." In ten schools investigated by them the percentage of malnourishment ranged from 28 per cent to 67 per cent.

Such conditions as these can be corrected only by a frank recognition of the facts by school authorities and by the most determined efforts to remedy them. It will not be an easy task to arouse apathetic and ignorant parents to the necessity of active measures for the correction of evil. We are still a long way from Spencer's ideal of a sound mind in a sound body, but we are beginning to understand the folly of trying to educate the mind and ignoring the body.

Good citizenship is impossible without healthy normal bodies. Just to the extent that the schools secure this result they are safeguarding the future of the country.